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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/632,235	08/04/2000	Allan Tzungren Tzeng	SUN-P4497	1869

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EXAMINER	
DO, CHAT C	

ART UNIT	PAPER NUMBER
2124	6

DATE MAILED: 12/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/632,235	TZENG ET AL.	
	Examiner	Art Unit	
	Chat C. Do	2124	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *8/4/00;10/10/00;10/17/00;2/24/03;3/28/03*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *2*.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Specification

1. Claims 1-7 are objected to because of the following informalities:

Re claim 1, the limitation "one local store" should replace with "one local storage" for clarification.

Re claim 4, the limitation "EAC" should replace with "end-around-carry".

Re claim 6, the semi-comma (;) at the end of the claim should replace with a period (.).

Re claim 7, the limitation "GRS" should replace with "Guard Round Sticky".

Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-7 are rejected under 35 U.S.C. 102(b) as being anticipated by Oberman et al. (U.S. 6,298,367).

Re claim 1, Oberman et al. disclose in Figure 6 processor comprising: at least one local store designed to contain a plurality of floating point values (from input unit 210); at least one floating point execution unit (230), floating point execution unit further

including a separator configured to retrieve plurality of floating point values from local store and make available a mantissa portion (M_A and M_B) from and corresponding to each of plurality of floating point values, floating point execution unit further including at least one adder unit (340) configured to receive mantissas in order and number determined by adder unit (output of 340); a compare unit (308) operatively coupled to at least one local store further comprising a separator configured to retrieve plurality of floating point values from local store and make available at least a mantissa portion of each of floating point values (E_B and E_A), and a comparison unit configured to make available a carry-out bit value resulting from an addition of mantissas portions; and, an end-around-carry bit calculator unit (320) operatively coupled to compare unit and configured to provide a correct value of an end-around-carry calculation available as output, based on values received from compare unit (350 and 360).

Re claim 2, Oberman et al. further disclose in Figure 9 compare unit further comprises as a component contained therein end-around-carry bit calculator unit (320).

Re claim 3, Oberman et al. further disclose in Figure 9 at least one floating-point execution unit further comprises as a component therein end-around-carry bit calculator unit (Figure 10).

Re claim 4, Oberman et al. further disclose in Figure 6 a machine readable medium containing a data structure having an instruction therein for determining which values from a local store containing floating point values to send to a floating point execution unit (From Input Unit 210), and in parallel to a compare unit (308 and 340),

where compare unit and floating point execution unit are operatively coupled to an EAC value calculator (350 and 360).

Re claim 5, Oberman et al. further disclose in Figure 9 method for providing a correct rounding choice for floating point subtraction (202 control) comprising: (a) providing a first floating point value having a sign, an exponent, and a mantissa (M_A and E_A); (b) providing a second floating point value having a second sign, a second exponent, and a second mantissa (M_B and E_B); (c) performing a compare of two floating point values while starting a subtraction of first and second mantissas (308); (d) calculating an end-around-carry value using results from compare (350); (e) using end-around-carry value to calculate a rounding choice (320); and, (f) providing rounding choice before subtraction is complete (320 before 340).

Re claim 6, Oberman et al. further disclose in Figure 9 method for providing increased parallelism in a processor comprising: (a) providing a first floating point value having a sign, an exponent, and a mantissa (M_A and E_A); (b) providing a second floating point value having a second sign, a second exponent, and a second mantissa (M_B and E_B); (c) starting in parallel a compare of first and second floating point values (308) and an addition of first and second floating point values (340), where addition is using the 2's complement form of second mantissa (336 in Figure 7); (d) using compare results to calculate an end-around-carry value (320).

Re claim 7, method for computing a floating point subtraction comprising: (a) providing a first floating point value having a sign, an exponent, and a mantissa (M_A and E_A); (b) providing a second floating point value having a second sign, a second exponent,

and a second mantissa (M_B and E_B); (c) performing a compare of two floating point values and providing the output of compare to an end-around-carry calculator unit (308); (d) calculating an end-around-carry value in end-around-carry calculator unit (320); (e) sending first and second mantissas to an adder (340); (t) aligning second mantissa to first mantissa in adder (314A and 314B); (g) starting an addition of first mantissa and a two's compliment form of second mantissa in adder (340); (h) providing calculated end-around-carry value before addition completes (output of 320); (i) using end-around-carry value: to calculate a GRS determine a rounding choice (350); (j) completing addition in adder (output of 340); (k) using rounding choice to choose a correct rounded answer from addition as soon as addition is completed (350); and, (l) providing a final answer using rounding choice, first and second signs, and first and second exponents (360)(e) having an end-around-carry value before addition completes (320 prior 340).

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. U.S. Patent No. 5,677,861 to Inoue et al. disclose an arithmetic apparatus for floating-point number.

b. U.S. Patent No. 6,205,461 to Mansingh discloses a floating-point arithmetic logic unit leading zero count using fast approximate rounding.

c. U.S. Patent No. 6,148,316 to Herbert et al. disclose a floating point unit equipped also to perform integer addition as well as floating point to integer conversion.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chat C. Do whose telephone number is (703) 305-5655. The examiner can normally be reached on M => F from 7:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chaki Kakali can be reached on (703) 305-9662. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Chat C. Do
Examiner
Art Unit 2124

November 26, 2003